

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions of claims in the application:

Listing of Claims:

1. (Currently Amended) A system, comprising:
 - a processor;
 - a memory;
 - a first component comprising a data object;
 - a universal data transfer interface comprising object oriented mobile code, wherein the object oriented mobile code is transmitted between a plurality of components and instructions of the first component to facilitate file access and printing to the plurality of components prior to initiation of a data transfer;
 - wherein the data object controls the universal data transfer interface;
 - wherein, in response to execution, the instructions return a data type supported by the first component, and a device type and an operating status of the first component, thereby facilitating the first component to negotiate with a second component to select a transfer medium for transfer of data of the data transfer between the first and second components based on the data type, wherein the data type is independent of an operating system domain and at least one peripheral domain; and
 - an intermediary component configured to invoke the universal data transfer interface to request and receive a data transfer session object (DTSO) and to transfer the DTSO to the second component, wherein the DTSO includes source specific object oriented mobile code that is interpreted and executed by the second component;
 - wherein the DTSO is invoked by the second component to transfer the data between the first component and the second component

a universal data transfer interface associated with a first computing device; and
a data object configured to be provided to a second computing device and enable the
second computing device to access the universal data transfer interface to initiate a data transfer
session between the first computing device and the second computing device by retrieval of a
data transfer session object, from the universal data transfer interface, which enables the second
computing device to:

receive, from the first computing device, a set of data types supported by the first
device;

select a data type from the set of data types; and

receive data from the first computing device over a first data transfer protocol and
translate data conforming to the data type based on a translation instruction or translation
data of the data transfer session object.

2. (Cancelled)

3. (Currently Amended) The system ~~as set forth in~~ of claim 1, ~~wherein the second component sends a second DTSO to the first component to be used by the first component to receive the data~~ wherein the data transfer session object further enables the second computing device to receive, from the first computing device, a context parameter indicating a current context of the computing device.

4. (Currently Amended) The system ~~as set forth in~~ of claim 1, ~~wherein the second component receives the DTSO from the first component to receive the data transmitted from the first component~~ wherein the data transfer session object further enables the second computing device to receive an initial lease duration parameter specifying a lease duration for which the data transfer session is valid.

5. (Cancelled)

6. (Cancelled)

7. (Currently Amended) The system ~~as set forth in~~ of claim 1, wherein the DTSO is configured to indicate completion responsive to expiration of a data transfer lease by the first component or by the second component, or responsive to an indication of the first component or to the second component that the data transfer has completed or failed wherein at least one of the translation instruction or the translation data enable the second computing device to convert the data from the first computing device from the first data transfer protocol to a second data transfer protocol associated with the second computing device.

8. (Currently Amended) A system,[[.]] comprising:

a processor;

a memory;

a first component comprising a first data object;

a second component comprising a second data object;

a first universal data transfer interface comprising object-oriented mobile code, wherein the object-oriented mobile code is transmitted between a plurality of components and instructions of the first component to facilitate file access and printing to the plurality of components, wherein the first data object controls the first universal data transfer interface, and wherein the first universal transfer interface is independent of an operating system type and at least one peripheral type;

wherein the instructions return a data type supported by the first component, and a device type and an operating status of the first component, thereby facilitating the first component to negotiate with another component to select a transfer medium for transfer of data based on the data type;

a second universal data transfer interface, wherein the second data object controls the second universal data transfer interface; and

an intermediary component configured to invoke the first universal data transfer interface and the second universal data transfer interface to request and receive a data transfer session object (DTSO) and to transfer the data between the first component and the second component;

wherein the DTSO includes source-specific object-oriented mobile code that is interpreted and executed by the first component or the second component.

an intermediary component configured to:

discover and retrieve a first data object on a first computing device, wherein the first data object is associated with a data source interface of the first computing device,

discover and retrieve a second data object on a second computing device, wherein the second data object associated with a data sink object of the second computing device,

retrieve a first set of data types supported by the first computing device using the first data object,

retrieve a second set of data types supported by the second computing device using the second data object,

send, via the second data object, an indication of a selected data type to the second computing device, wherein the intermediary component is configured to select, as the selected data type, a data type contained in at least one of the first set of data types or the second set of data types,

retrieve a data transfer session object from the first computing device, the data transfer session object including one or more first instructions to initiate a data transfer session between the first computing device and the second computing device, and

send the data transfer session object to the second computing device, wherein the data transfer session object is configured to provide the second computing device with at least one of a translation instruction or translation data that enables the second computing device to receive data from the first computing device over a first data transfer protocol associated with the first computing device and to translate data conforming to the data type.

9. (Currently Amended) The system ~~as set forth in~~ of claim 8, wherein the intermediary component ~~sends the DTSO to the first component to be used by the first component to receive the data transmitted from the second component~~ is further configured to receive, during the data transfer session, the data from the first computing device via the data transfer session object and to send the data to the second computing device via the data transfer session object.

10. (Currently Amended) The system as set forth in of claim 8, wherein the intermediary component sends the DTSO to the second component to be used by the second component to receive the data transmitted from the first component wherein the data transfer session object further includes an initial lease duration parameter specifying a lease duration for which the data transfer session is valid.

11. (Currently Amended) The system as set forth in of claim 8, wherein the DTSO is configured to indicate completion responsive to expiration of a data transfer lease by the first component or the second component, or responsive to an indication of the first component or the second component that the data transfer has completed or failed wherein the intermediary component is further configured to utilize the data transfer session object to negotiate a data transfer protocol to be used for the data transfer session based on the selected data type.

12. (Currently Amended) A method, comprising:

invoking, with an intermediary component comprising a data object that implements a universal data transfer interface, wherein the universal data transfer interface enables requesting and receiving of a data transfer session object (DTSO) and transferring of the DTSO to the intermediary component, and wherein the universal data transfer interface comprises object-oriented mobile code;

invoking the DTSO with a second component to transfer data between the first component and a second component;

transmitting the object-oriented mobile code between a plurality of components and instructions of the first component, thereby facilitating file accessing and printing to the plurality of components prior to initiating a data transfer;

receiving a data type supported by the first component, and a device type and an operating status of the first component, thereby facilitating negotiating by the first component with the second component in selecting a transfer medium for transferring the data between the first and second components based on the data type, wherein the instructions are independent of an operating system identification and at least one peripheral identification; and

executing source-specific object-oriented mobile code of the DTSO by the second component

receiving, at a first computing device, a data object from a second computing device having a universal data transfer interface;

initiating a data transfer session by accessing the universal data transfer interface using one or more first instructions provided by the data object;

retrieving, via the data object, a data transfer session object from the universal data transfer interface;

retrieving, from the second device, a list of data types supported by the second computing device using the data transfer session object;

selecting a selected data type from the list of data types to be used for the data transfer session; and

sending, by the data transfer session object, at least one of a translation instruction or translation data to the first computing device that enables the first computing device to receive data from the second computing device over a first data transfer protocol and translate data from the second computing device conforming to selected the data type.

13. (Cancelled)

14. (Currently Amended) The method ~~as set forth in~~ of claim 12, further comprising ~~sending a second DTSO to the first component to be used by the first component for receiving the data transmitted from the intermediary component~~ retrieving, from the second computing device, an initial lease parameter defining a lease duration for which the data transfer session is valid.

15. (Currently Amended) The method ~~as set forth in~~ of claim 12, further comprising ~~receiving the DTSO from the first component to be used by the intermediary component for receiving the data transmitted from the first component wherein the sending includes sending the first computing device one or more conversion instructions that allow the first computing device to convert the data from the second computing device from the first data transfer protocol to a second data transfer protocol associated with the first computing device.~~

16. (Cancelled)

17. (Cancelled)

18. (Currently Amended) The method ~~as set forth in~~ of claim 12, further comprising indicating completion by the DTSO data transfer session object responsive to ~~expiring of a data transfer lease by the first component or indicating~~ an indication that the data transfer session has completed or failed.

19. (Currently Amended) A method, comprising:

invoking a first universal data transfer interface of a first data object belonging to a first ~~component~~ computing device and invoking a second universal data transfer interface of a second data object belonging to a second ~~component~~ computing device;

~~intermediating by the second component to facilitate transferring of the DTSO from the first component to a third component;~~

~~obtaining a data transfer session object (DTSO) from one of the first universal data transfer interface or the second universal data transfer interface;~~

~~employing the DTSO to transfer data between the first component and the second component;~~

~~wherein the universal data transfer interface includes object-oriented mobile code enabling transmitting between a plurality of components and executing instructions to facilitate file accessing and printing to the plurality of components prior to initiating a data transfer;~~

~~returning a data type supported by the first component, and a device type and an operating status of the first component, thereby facilitating negotiating with the second component including selecting a transfer medium for transferring data between the first and second components based on the data type, wherein the data type and the device type are independent of an operating system domain and at least one peripheral domain; and~~

~~employing source-specific object-oriented mobile code within the DTSO that is interpreted and executed by the second component~~

retrieving a first set of data types supported by the first computing device using the first data object;

retrieving a second set of data types supported by the second computing device using the second data object;

selecting a selected data type to be used for a data transfer session between the first computing device and the second computing device, including selecting the selected data type from one of the first set of data types or the second set of data types;

sending, by the second data object, an indication of the selected data type to the second computing device;

retrieving a data transfer session object from the first computing device, the data transfer session object including one or more first instructions that initiate the data transfer session; and

sending to the second computing device, via the data transfer session object, at least one of a translation instruction or translation data that enables the second computing device to receive data from the first computing device over a first data transfer protocol associated with the first computing device and to translate data conforming to the data type.

20. (Currently Amended) The method ~~as set forth in~~ of claim 19, further comprising ~~sending the DTSO to the first component to be used by the first component for receiving the data transmitted from the second component~~ negotiating, by the data transfer session object, the first data transfer protocol to be used for the data transfer session based on the selected data type.

21. (Currently Amended) The method ~~as set forth in~~ of claim 19, further comprising ~~sending the DTSO to the second component to be used by the second component for receiving the data transmitted from the first component~~ wherein the sending at least one translation instruction or translation data includes sending the second computing device one or more conversion instructions that allow the second computing device to convert the data from the first computing device from the first data transfer protocol to a second data transfer protocol associated with the second computing device.

22. (Currently Amended) The method ~~as set forth in~~ of claim [[19]] 44, further comprising configuring the ~~DTSO data transfer session object~~ to indicate completion responsive to expiring of [[a]] the data transfer lease by the first component or by the third component, or responsive to at least one of the first component computing device or [[to]] the third component second computing device indicating that the data transfer has completed or failed.

23. (Currently Amended) A non-transitory computer-readable storage medium having stored thereon computer-executable instructions which, in response to execution by a computing system, cause the a computing system to perform operations comprising:

~~invoking a data object that implements a universal data transfer interface via an intermediary component and requesting for and receiving receive a data transfer session object (DTSO) to transfer the DTSO to the intermediary component, and~~

~~invoking the DTSO via with a second component to transfer data between the first component and the second component;~~

~~wherein the universal data transfer interface includes object-oriented mobile code to enable transmission of information between a plurality of components and execution of instructions to facilitate file access and printing to the plurality of components prior to initiating a data transfer;~~

~~returning a data type supported by the first component, and a device type and an operating status of the first component, and selecting a transfer medium for transferring data between the first and second components based on the data type, wherein the instructions are independent of an operating system type and at least one peripheral type; and~~

~~employing source-specific object-oriented mobile code within the DTSO that is interpreted and executed by the second component~~

invoking, at a first computing device, a data object from a second computing device having a universal data transfer interface;

retrieving, via the data object, a data transfer session object from the universal data transfer interface to facilitate managing a data transfer session;

retrieving, in accordance with first operations of the data transfer session object, a set of data types supported by the second computing device;

selecting a selected data type, from the set of data types, to be used for the data transfer session;

providing the first computing device with at least one of a translation instruction or translation data in accordance with second operations of the data transfer session object; and

receiving, at the first computing device, data conforming to the selected data type from the second computing device over a first data transfer protocol, wherein the receiving includes

employing at least one of the translation instruction or the translation data to receive and translate the data.

24. (Cancelled)

25. (Currently Amended) The non-transitory computer-readable storage medium as set forth in of claim 23, the operations further comprising ~~sending a second DTSO to the first component~~ to be used by the first component for ~~receiving the data transmitted from the intermediary component~~ retrieving, in response to the executing the one or more first operations, a duration of an initial lease for the data transfer session.

26. (Currently Amended) The non-transitory computer-readable storage medium as set forth in of claim 23, the operations further comprising ~~receiving the DTSO from the first component to be used by the intermediary component for receiving the data transmitted from the first component~~ employing, at the first computing device, at least one of the translation instruction or the translation data to convert the data from the second computing device from the first data transfer protocol to a second data transfer protocol associated with the first computing device.

27. (Cancelled)

28. (Cancelled)

29. (Currently Amended) The non-transitory computer-readable storage medium as set forth in of claim 23, the operations further comprising ~~indicating completion by the DTSO responsive to expiring of a data transfer lease by the first component~~ indicating that the data transfer has completed or failed retrieving, in response to the executing the one or more first operations, a context parameter indicating a current context of the second computing device.

30. (Currently Amended) A non-transitory computer-readable storage medium having stored thereon instructions which, in response to execution by one or more computing devices, cause the one or more computing devices to perform operations comprising:

invoking a first universal data transfer interface of a first data object belonging to a first component computing device and invoking a second universal data transfer interface of a second data object belonging to a second component computing device in response to the first component computing device having data to transfer to the second component computing device; wherein the second component is an intermediary component that facilitates transferring of the DTSO from the first component to a third component;

obtaining a data transfer session object (DTSO) from one of the first universal data transfer interface or the second universal data transfer interface; and

using the DTSO to transfer data between the first component and the second component;

wherein the one of the first universal data transfer interface or the second universal data transfer interface comprises object-oriented mobile code that enables transmitting between a plurality of components and to facilitate file access and printing;

returning a data type supported by the first component, and a device type and an operating status of the first component and negotiating with the second component to enable selecting a transfer medium for transferring data between the first and second components based on the data type, wherein the instructions are independent of an operating system domain and at least one peripheral domain; and

employing source-specific object-oriented mobile code within the DTSO that is interpreted and executed by the second component

retrieving a first set of data types supported by the first computing device in accordance with an operation of the first data object;

retrieving a second set of data types supported by the second computing device in accordance with a first operation of the second data object;

selecting a selected data type to be used for a data transfer session between the first computing device and the second computing device, including selecting the selected data type from one of the first set of data types or the second set of data types;

sending an indication of the selected data type to the second computing device in accordance with a second operation of the second data object;

retrieving a data transfer session object from the first computing device, the data transfer session object including one or more first instructions that, in response to execution on the second device, initiate the data transfer session; and

providing the second computing device with one or more translation instructions of the data transfer session object that allow the second computing device to receive data from the first computing device over a first data transfer protocol associated with the first computing device and to translate data corresponding to the selected data type.

31. (Currently Amended) The non-transitory computer-readable storage medium as set forth in of claim 30, the ~~instructions~~ operations further comprising ~~sending the DTSO to the first component to be used by the first component for receiving data transmitted from the second component negotiating, by the data transfer session object, the first data transfer protocol to be used for the data transfer session based on the selected data type.~~

32. (Currently Amended) The non-transitory computer-readable storage medium as set forth in of claim 30, the ~~instructions~~ operations further comprising ~~sending the DTSO to the second component to be used by the second component for receiving data transmitted from the first component~~ providing the second computing device with one or more conversion instructions of the data transfer session object that allow the second computing device to convert the data from the first computing device from the first data transfer protocol to a second data transfer protocol associated with the second computing device.

33. (Currently Amended) The non-transitory computer-readable storage medium as set forth in of claim 30, the ~~instructions~~ operations further comprising ~~configuring the DTSO to indicate indicating completion responsive to expiring of a data transfer lease by the first component~~ indicating an indication that the data transfer of the data from the first computing device has completed or failed.

34-36. (Cancelled)

37. (New) The system of claim 4, wherein the data transfer session object is configured to end the data transfer session in response to expiration of the lease duration unless at least one of the first computing device or the second computing device renews the data transfer session prior to the expiration.
38. (New) The system of claim 1, wherein the data transfer session object further enables the second computing device to negotiate the first data transfer protocol to be used for the data transfer session based on selection of the data type from the set of data types.
39. (New) The system of claim 3, wherein the data transfer session object is configured to determine whether to transfer the data from the first computing device based on the context parameter.
40. (New) The system of claim 10, wherein the data transfer session object is configured to end the data transfer session in response to expiration of the lease duration unless at least one of the first computing device, the second computing device, or a host computer on which the component resides renews the data transfer session prior to the expiration.
41. (New) The method of claim 12, further comprising executing, by the first computing device, one or more second operations included in the data transfer session object that negotiate the first data transfer protocol to be used for the data transfer session based on the selected data type.
42. (New) The method of claim 12, further comprising retrieving, from the second computing device, a context parameter indicating a current context of the second computing device in accordance with the data transfer session object.
43. (New) The method of claim 14, further comprising ending the data transfer session in response to expiration of the lease duration unless at least one of the first computing device or the second computing device renews the data transfer session prior to the expiration.

44. (New) The method of claim 19, further comprising determining a duration of a data transfer lease associated with the data transfer session and encoded in the data transfer session object.
45. (New) The method of claim 19, further comprising:
receiving the data from the first computing device via the data transfer session object; and
sending the data to the second computing device via the data transfer session object in accordance with the selected data type.
46. (New) The non-transitory computer-readable storage medium of claim 23, further comprising negotiating, by the data transfer session object, the first data transfer protocol to be used for the data transfer session based on the selected data type.
47. (New) The non-transitory computer-readable storage medium of claim 29, the operations further comprising determining whether to proceed with the data transfer session contingent on the context parameter.
48. (New) The non-transitory computer-readable storage medium of claim 25, the operations further comprising ending the data transfer session in response to expiration of the initial lease unless at least one of the first computing device or the second computing device renews the data transfer session prior to the expiration.
49. (New) The non-transitory computer-readable storage medium of claim 30, the operations further comprising determining a duration of a data transfer lease encoded in the data transfer session object.
50. (New) The non-transitory computer-readable storage medium of claim 30, the operations further comprising:
receiving the data from the first computing device via the data transfer session object; and
sending the data to the second computing device via the data transfer session object.